

A Critique of Jaegwon Kim's "Emergence: Core Ideas and Issues"

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Jaegwon Kim buttresses an impeccable logic with a very effective use of language. This encourages one to approach his writing with the best of good will and a ready willingness to be persuaded. Because of his persuasive powers, it becomes all the more necessary to exercise caution. With this in mind I venture to criticize his "Emergence: Core Ideas and Issues," *Synthese* (2006): 151: 547–559.

The idea of emergence has enjoyed a remarkable resurgence a century after an initial outburst of interest, coming not only from the British philosophers Kim mentions, but arguably more widely from people such as Henri Bergson, Friedrich Engels, Friedrich Nietzsche and the American pragmatists. I believe Kim stands on solid ground when he suggests that its intuitive appeal was that it drew needed philosophical attention to what is uplifting, creative and expansive. From a more sociological perspective, the prevailing mechanistic view of the world seemed increasingly inadequate as the contradictions of late 19th and early 20th-century Europe deepened and mainstream philosophers turned their attention to the Romantic and revolutionary undercurrents always present in European culture.

Because the concept of emergence is today "bandied about," as Kim puts it, without much shared meaning by those who employ it, Kim's aim is to expose it to the critical scrutiny of analytic philosophy. While this effort at clarification is certainly welcome, the question he raises as to whether "emergence" is potentially interesting, robust and theoretically useful cannot be addressed simply in terms of conceptual coherence without bringing in its social implications. Because he chooses not to do this, he can only conclude that the notion currently has limited utility because of its lack of philosophical coherence.

Any line of argument rests upon a foundation of self-evident truths, and Kim wisely brings them out right at the beginning. The foundation for his discussion of emergence is it remain "true to its historical origins in the early 20th century" (p. 548). That is, his foundation precludes the consideration

of any "paradigm shift". His argument, then, really comes down to the point that the initial representation of emergence was logically incoherent and recent users so far have failed to resolve the problem. He does not address whether it might be serviceable today if the underling intuition that the real world has a way of generating unexpected outcomes be cast in ways that are fundamentally different from those offered by the British tradition.

Kim infers that the classic notion of emergence entailed two components: supervenience and irreducibility. This may be so, but the problem is that both concepts are themselves problematic. Kim goes on to dismiss two weaker notions of supervenience as trivial to look more carefully at "radical" meriological supervenience that considers the relation of the properties or behaviors of an emergent whole to those of its base or constituent level.

His being wedded to the traditional epistemology reveals how the philosophical presuppositions employed to explain the unpredictable outcomes that we always experience end by making their explanation impossible. First of all is his assumption that emergence has to do with a hierarchy of levels, generally known as the base level and the emergent level of the whole, limits attention to the intrinsic properties of the two levels. This static (synchronic) way of representing the matter draws attention away from its alternative (diachronic) representation as an original state of affairs and the outcome that subsequently emerges from it. Seeing emergence in this way as a process would tend to make the argument naturalistic rather than just ideational, which in principle would offer objective criteria for choosing among different perspectives.

Kim rather casually brings up the unobservable relation of parts and the whole, which is presumably inferred from observable changes in their properties or behaviors. Kim implicitly embraces a scientific realism, which holds that unobservables are real when they have real effects. He assumes without justification that the unobservable property held by parts is their functional relation to the whole. Unfortunately, this cannot simply be taken for granted as Kim does, for two reasons. First, in principle there is no reason why some unobservables may not affect other unobservables and have no immediate empirical effect (a point that often comes up in fundamental physics). These other unobservables might account for emergence and can therefore not be excluded a priori. Secondly, a functional property may be inferred from the properties or behavior of an emergent level, but it cannot explain how it

came into being. That is, without appealing to an idealism, functionality must arise from the relation of constituents, and since these relations depend on their observable properties, a whole must reduce to them and fail to be emergent.

There is reason to believe that a presumption of a hierarchy of levels makes the explanation of emergence hopeless right from the beginning. The real world in fact consists of processes that are to varying degrees open and not entirely reducible to their intrinsic properties. The positivist model based on an unequivocal or mechanical determinism refers to closed systems, which we now understand to be merely hypothetical limiting cases. In principle, all outcomes are to somewhat unpredictable in light of their intrinsic properties. If a level implies closure in the sense that its intrinsic properties are deemed essential, it ends being a one-sided or artificial way to represent real processes, which reduces them to just their local structures, to intrinsic observables and any justifiable inferences we draw from them. It leaves out the ultimately non-local potencies for change and the real possibilities for alternative states of affairs that ultimately must exist if change is to take place. Since Aristotle a modal realism has distinguished necessity, possibility and potency as the essential aspects of processes. That empiricism reduces them to one, just local structures governed by necessity, but doing so clearly makes the goal of irreducibility impossible. If, as Kim notes, a given observable state of affairs can give rise to different emergent properties, it surely implies something must be present and operative that does not reduce to intrinsic properties. Merely inferring functionality from a constant conjuncture of base and emergent level describes their association, but fails to explain it.

Another problem here is that observational data are taken to represent truths about an entity such as a level. This, again, is contrary to fact, for it is generally agreed that phenomena are constructed by our sensory apparatus and mind. The apple is not really red, but merely absorbs a certain frequency of photons, and the remainder that impinge on the retina give rise to an electro-chemical change in the synapses. The term "red" merely indexes what is happening in the brain, and there is no correspondence with either photons or electro-chemistry. However, this is not to embrace subjectivism, for it merely points out that the process we think of as red arises from the entanglement of mind and world. While this relation is one of probabilistic correlation, it has nothing to do with the reflection or correspondence of observables. Given this, it becomes difficult to treat emergence in terms

of just the local properties of levels in which relations are, as Kim admits, necessary: the very meaning of base level "implies the presence of a regular determinative, or necessitating, relationship" (p.550). Arguably the problem is resolved if the base is seen to enable the emergent level rather than make it necessary.

Now Kim is quick to add that this necessary relation can be statistical in nature rather than just one of unequivocal determinism. The idea is that this would allow a given state of affairs to result in different outcomes. To explain why he resorts to a problematic verbal argument: these statistical regularities are "lawful", and so the statistical relation of base and emergent level remains a necessary one. Unfortunately, this does not stand up. The degree to which an outcome is statistically probable depends on the degree the system is open. With relatively open systems this necessity becomes so tenuous as to be useless. The term supervenience refers to the dependence of emergent level on its base, but to call it "lawful" stretches the term beyond recognition. Whether it rains on Monday a month hence is determined by factors present on that Monday, and it is not caused by laws that are operative today (a Markov Process forgets its past). Such a long-range prediction is too statistically broad to be of any help. Describing the base and the emergent levels in statistical terms only adds a degree of uncertainty; it does not explain how there can be something about the emergent level that is not implied by its base.

The term emergence is used very loosely, but rather than turn to the physical world to clear things up, Kim clings to the British tradition of trying to solve problems by clarifying the definitions of terms words and a sharpening of logic. He suggests there are three kinds of relations of properties. (Disregarding the issue of whether properties can have relations) he distinguishes a) supervenience (defined by negation as necessary relation or dependence that is not unequivocally causal), b) predictability (in the philosophy of science, predictability now refers to the confidence we have in our predictions of the outcome of singular causation, not the reified force of universal laws), c) explainability (seeing the relation of events or properties as being necessary satisfies our need for control). The assumption that explanation appeals to a cosmic coherence based on universal causal lawfulness or Kantian rationality seems a modern Western prejudice from which the natural sciences are trying to distance themselves.

I suspect the basic issue here is really whether a line can be drawn between a dependency that is some way objective or ontological and the epistemological and subjective requirements of prediction and explanation. Kim tries to remain on the ontological level and argues that supervenience and functional irreducibility are necessary but not sufficient conditions for emergence. Both, however, are vacuous. A non-causal dependence really begs the question of its objective nature beyond an observed constant conjuncture of events or properties.

After probing the terms supervenience and irreducibility, Kim is forced to conclude that they are insufficient to account for emergence because they are negative, they are descriptive rather than explanatory. What he feels is missing is what he calls downward causation. Unfortunately, matters here go from bad to worse.

To justify this recourse to downward causation, Kim start with an appeal to the truth of Samuel Alexander's Dictum of 1920: "To be real is to have causal powers" as if it were highly problematic. A major criticism of Alexander's Dictum is that a reduction of causality to causal powers marginalizes the empirically specific dispositions of things, although it is these novel properties that emergence aims to explain. Furthermore, there is danger in treating causal power here as an abstract reified idea. Although more often than not identified with free energy, if is more accurate to define causal power as a relation of the relative probability of two states of affairs that defines a probability gradient. That is, causal power is not an intrinsic property and therefore is incompatible with an empiricist definition of emergence. Free energy accounts for the quantity of an effect, not its quality, and together they define a probability distribution of possible outcomes.

To illustrate the problem, it can be noted that causal power or potency for change in fact more often than not gives rise to "dissipation" (an increase in entropy, a more probable outcome) than it does to emergence. It is the very opposite of what is meant by emergence, for the outcome of dissipation in principle is predictable. Clearly, there has to be something more involved than just causal power operating in terms of intrinsic properties.

Kim concludes that while the concept of emergence is appealing at the intuitive level, it so far remains of little use because it fails to deal with two unresolved problems. The first is that supervenience and irreducibility are defined by negation and lack positive content. The point is well taken, but

it does not imply they cannot be given positive content, which I have attempted to do elsewhere by jettisoning modern Western epistemology, which Kim is not prepared to do.

The other problem is the failure of emergentism to confront downward causation, but as I have indicated above, the objection seems more the effect of philosophical presuppositions than having any physical foundation. Here the difficulty seems to arise from the modern Western appeal to causal laws to account for the coherence of the cosmos needed for scientific advance. Today it seems we may be witnessing a "paradigm shift" in which this traditional ontology is increasingly seen as inadequate. As natural science shifts attention to the mechanisms that account for singular causality, these mechanisms engage non-local potencies and possibilities that are not intrinsic to things.

My own view is that we can justify the instinctive appeal of the word emergence by defining it in terms of relative improbability. The more closed we frame a situation, the more probable will be its outcome. If the outcome of a process moves toward a state less probable than its base level or initial state, we can usefully categorize it as being emergent. To give substance to the word, it is necessary to bring in relation of a given structure to some other possible and more probable state, for this extrinsic probability gradient is the ultimate engine of change. Likewise, an emergent structure can be represented as a constraint on the possibilities of a more universal process to yield a relatively improbable state of affairs. While this lends substance to emergentism, it will not find appeal among radical empiricists, who are uncomfortable about an appeal to non-local unobservables. However, this seems an obvious way to make emergence a robust and useful concept.

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